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SCIENTIFIC
ARTICLE

Indirect Composite Restorations - A Case Study

BY TIMOTHY ADAMS, DDS

Moving from the mechanical age to the adhesive age in dentistry has brought about a tremendous amount of excitement and growth to a once stagnant field of dental products. There has never been a time in dentistry where we have had such a variety of great products and techniques from which to choose.

With an incredible array of new products and techniques, the choice can be confusing and overwhelming. Ten-plus years ago, the decision process on restoring teeth hinged on what brand of varnish, dycal and alloy would work in a wet environment. Now a PHD in biomaterials and 20 journal subscriptions is needed just to get a uniform issued to play the game. With the help of major manufacturers, dentistry has continued to develop, refine and shape the rapidly changing field of adhesive dentistry. The following case report will briefly examine the placement of an indirect lab-processed composite resin, belleGlass HP.

CASE REPORT

A 31-year old female presented a defective leaking silver mercury filling on tooth #30. With a high level of interest in conserving tooth structure and cosmetics in mind, the patient opted for an indirect restoration versus another larger silver mercury filling or a traditional core build-up and crown. With these desires in mind, belleGlass was chosen as the restorative material due to its enhanced strength, polishability and aesthetics.

The tooth was anesthetised, shades were taken cervically, incisally and occlusally and a rubber dam was placed to ensure proper isolation. The silver mercury filling was removed with copious water spray and the tooth was stained with a caries detection liquid (SEEK) to confirm the presence of decay. Decay was noted under the restoration. The tooth was then prepared for an adhesive indirect onlay. The rubber dam was removed and an impression was taken (Take 1-Kerr) showing excellent detail and clarity. The tooth was then temporized (Fermit-N-Ivoclar), occlusion adjusted and polished. A detailed color mapping was performed using the LVI color mapping system. To prove what an essential and valuable communication tool the color mapping system is, the author was able and fortunate to use a very talented laboratory (Vincent DeVaud) for the first time and still produce a very natural looking restoration.





Upon the patients return, the tooth was once again anethestised, the rubber dam was placed and the temporary was removed. Hydrogen peroxide was used to clean the preparation and the belleGlass restoration was tried in for marginal fit, color, contour and flossed interproximally to verify solid contacts. The restoration was then rinsed off with water, dried with an air dryer (Adec) and etched with 35 percent phosphoric acid gel.

The phosphoric acid was then rinsed with a copious amount of water dried again with an air drier. A prehydrolyzed silane coupling agent (3M) was then applied to the internal surface in order to improve the chemical bond between the polymers in the resin filling cement and the ceramic filler particles in the restoration. The preparation was then disinfected with an antimicrobial rinse (Consepsis-Ultradent) and rinsed thoroughly. Phosphoric acid was then used to "total etch" all internal aspects of the preparation including enamel and dentin for 10 to 15 seconds and then rinsed with copious water spray.

The preparation is then lightly air dried being careful not to dessicate the tooth. A second antimicrobial solution (Tublicid Red-Global Dental Products) was used as a wetting solution and lightly blotted with a multibrush to prevent oversaturation of the dentin. The dentin should be moist with a glistening surface. OptiBond Solo Plus (Kerr) was then applied for 15 seconds with a multibrush using a light brushing motion. The primer was lightly air thinned for approximately three seconds to remove the alcohol carrier. A shiny glistening surface should be evident at this point in time.

The preparation was then light cured for 20 seconds. A dual-curing, radiopaque fluoride releasing luting resin cement (Variolink II-Ivoclar) was mixed carefully and placed into the preparations. At the same time a dual curing bonding agent was applied to the internal aspect of the restoration and

was seated with firm pressure to verify positive seating. The excess luting material was removed with a multibrush and a rubbertip instrument. The restoration was spot tacked in place and excess resin was removed interproximally using dental floss.

The restoration was then coated over all exposed margins to eliminate the possible formation of an oxygen inhibition layer. Final polymerizaton was achieved using an argon laser. The excess polymerized cement was removed utilizing a curette and carbide and diamond finishing burs (Kerr). The occlusion and proper anatomy was established and final polishing was accomplished with a diamond polishing paste (Kerr). The final analysis reveals a very life-like restoration with exceptional contour, marginal fit, anatomy, color and strength.

CONCLUSION

Laboratory processed indirect composite restorations are becoming more prevalent in the restorative dentists armamentarium. With the ability to bond teeth close to their original state, with wear rates rivaling gold and a noticeable reduction in the number of teeth requiring root canal therapy as compared to conventional cemented full coverage restorations over a ten year study (Fuzzi M.,Rapelli G-Bologna, Italy: Osimo, Italy-J Dent 26:623-626,1998) it is no wonder adhesively retained restorations are challenging and gaining ground in their use as compared to mechanically retained restorations. Why not? Adhesive dentistry is leaving a very heavy paper trail in the literature of success that even the staunchest critics are having a hard time ignoring. The argument has always been there aren't any studies longer than two or three years. Now that we are at 10 years, I wonder what they will say at 20 years? It sure is more enjoyable and rewarding to adhesively engineer the architecture of a compromised tooth back to health as compared to mechanically amputating and compromising a tooth even more.

Dr. Timothy Adams maintains a private practice in Indianapolis. He is a clinical instructor at the Las Vegas Institute for Advanced Dental Studies, where he received his post-graduate education. Dr. Adams lectures frequently on adhesive dentistry and has published several articles in leading dental publications.

Best wishes to all HDA members and their families and staff for a happy Holiday Season and a healthy and prosperous New Year! **Dr. Ed Cassella & Staff**

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Sky Financial Group – practice financing
Discover Novus Network – accepting Discover Card
Equifax – check certification and guarantee
CareCredit – patient financing for dental work
Dale Carnegie – personal leadership training
Newman Consulting – dental office staff training

This is only a partial list. It will grow and we will be telling you more about them all.

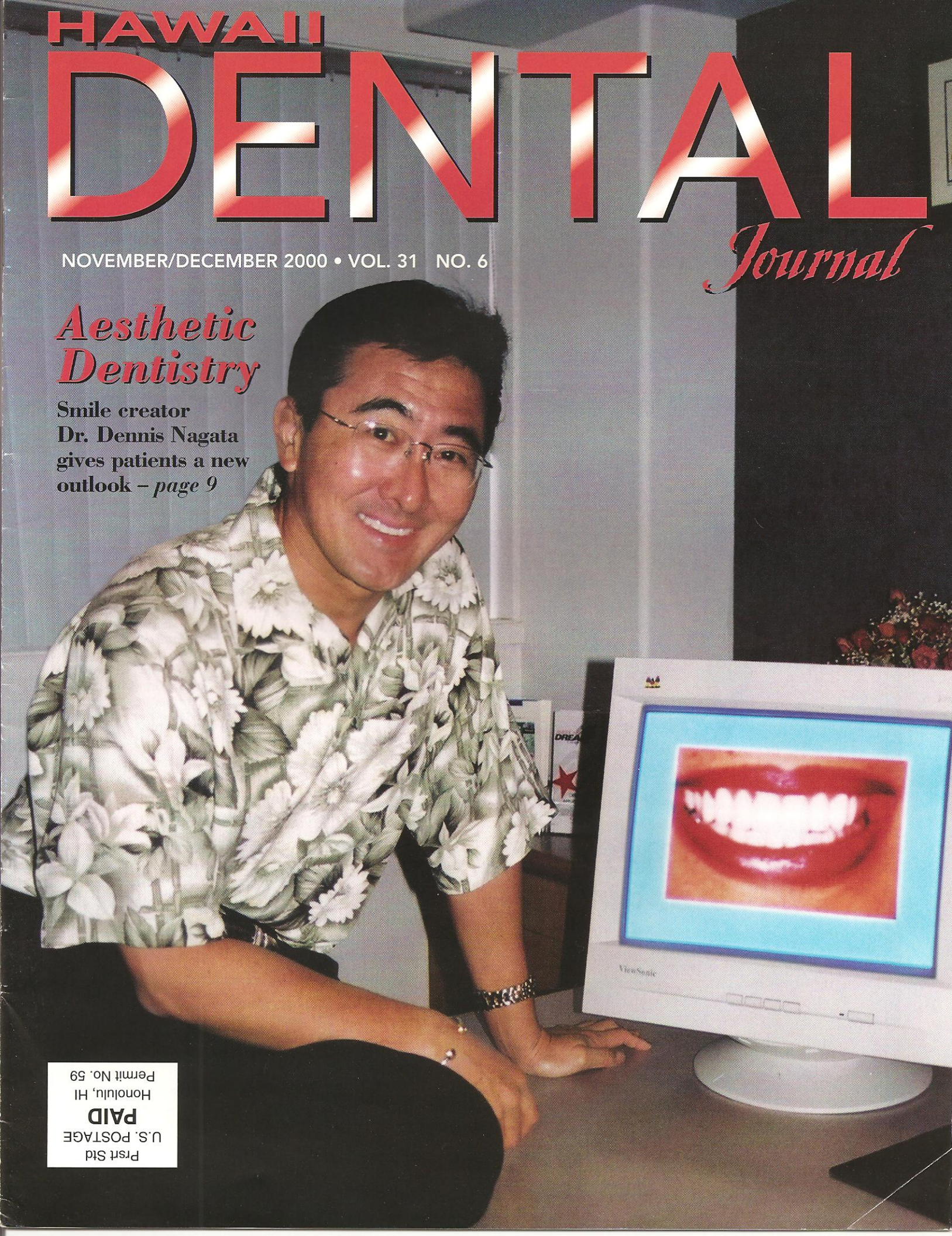
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Aesthetic Dentistry

Smile creator Dr. Dennis Nagata gives patients a new outlook – *page 9*



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